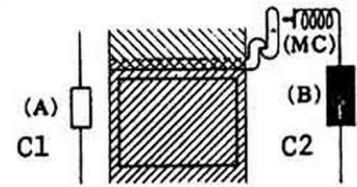


8. Moving Coil mode, Electronic circuit and parts

8-1 Electronic circuit

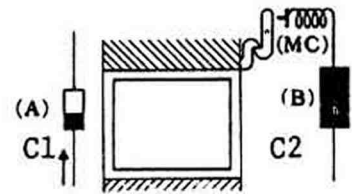
A. The exposure time control capacitor C1 discharges :

- 1) With the film advance crank or knob wound, the C1 capacitor discharges completely by switch-on of SW2 Trigger switch.
- 2) At this time, the moving coil capacitor C2 is charged at peak voltage of the battery.



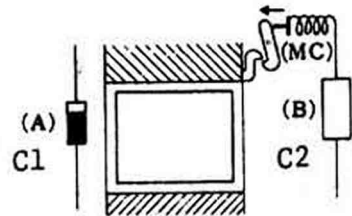
B. Beginning of charge to C1 capacitor

- 1) When depressing the shutter release button, the 1st curtain runs and the shutter is opened. Simultaneously, the SW1 Main switch is on.
- 2) When the 1st curtain moves, the SW2 Trigger switch is off and then the exposure time control capacitor C1 begins to charge.
- 3) The charge-time of capacitor C1 is determined by VR1 (Shutter speed).



C. Determining exposure time :

- 1) When the capacitor C1 reaches the determined voltage in VR2, the moving coil is moved by I C.
- 2) Capacitor C2 discharges, energizing the moving coil which in turn moves the 2nd curtain runs and the shutter is closed.

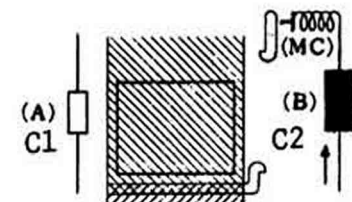


D. Charge to capacitor C2

- 1) With the 2nd curtain closing, SW1 main switch is off and then capacitor C2 charges.
- 2) The charge-time is extremely short and accomplished by very little electric power.

Battery performance is maintained at a high level, as indicated in the accompanying diagrams, as the moving coil condenser is normally charged keeping the battery at peak voltage.

Thus the battery is protected from drops in voltage, as when the switch is on.



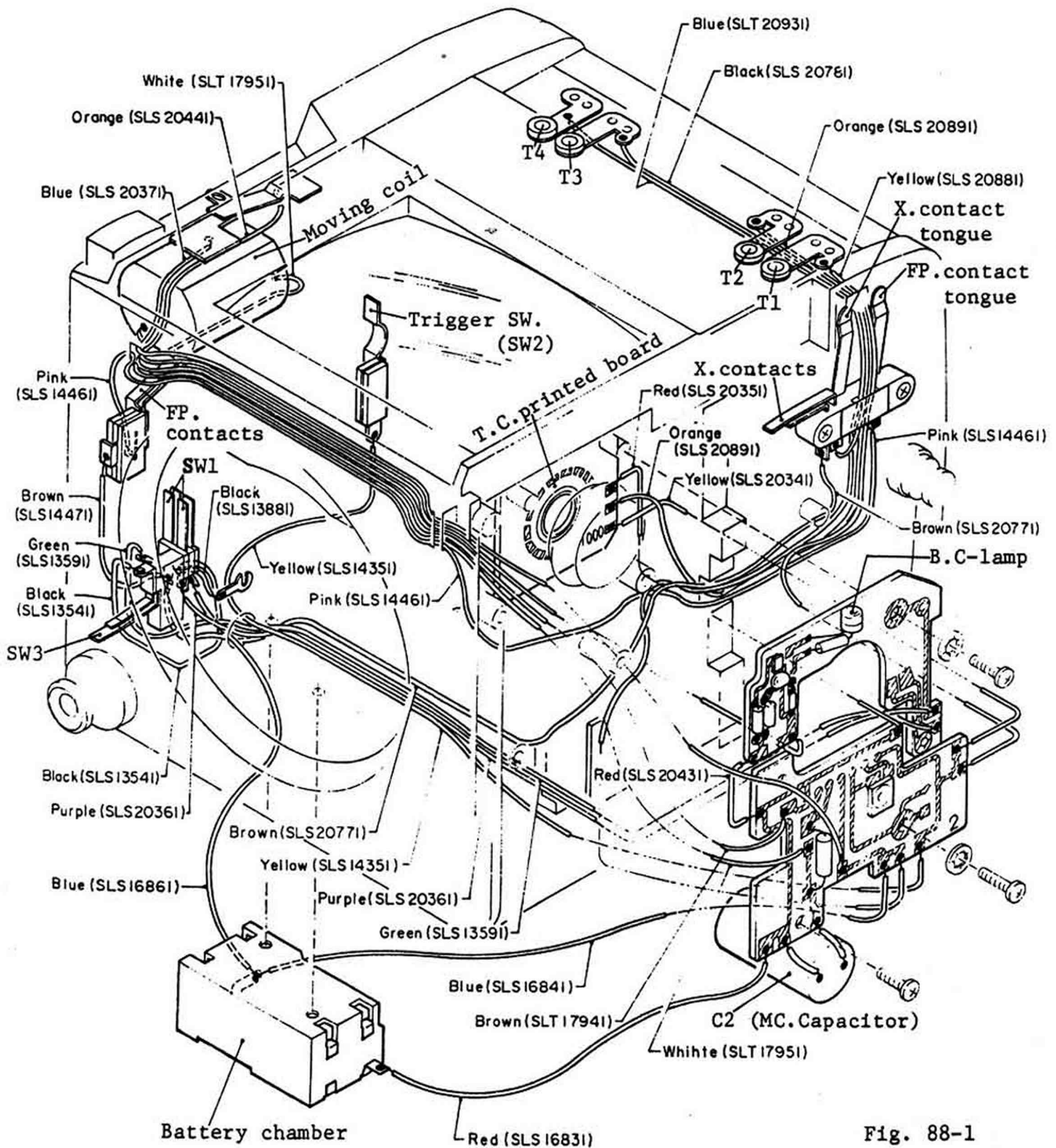


Fig. 88-1

Electric Circuit Diagram

(For M645 1000S)

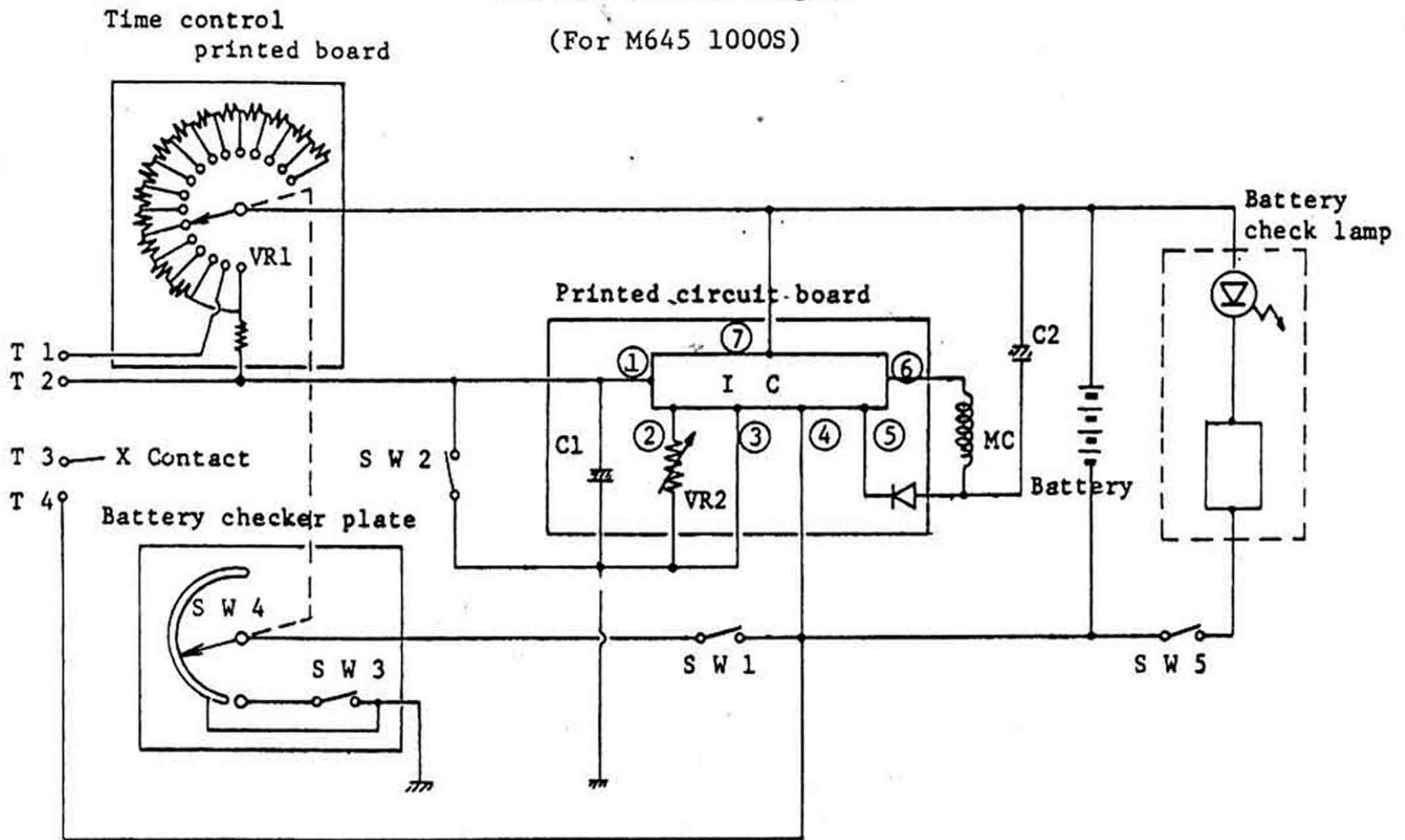


Fig. 88-2

Electric Circuit Diagram

(For M645 500)

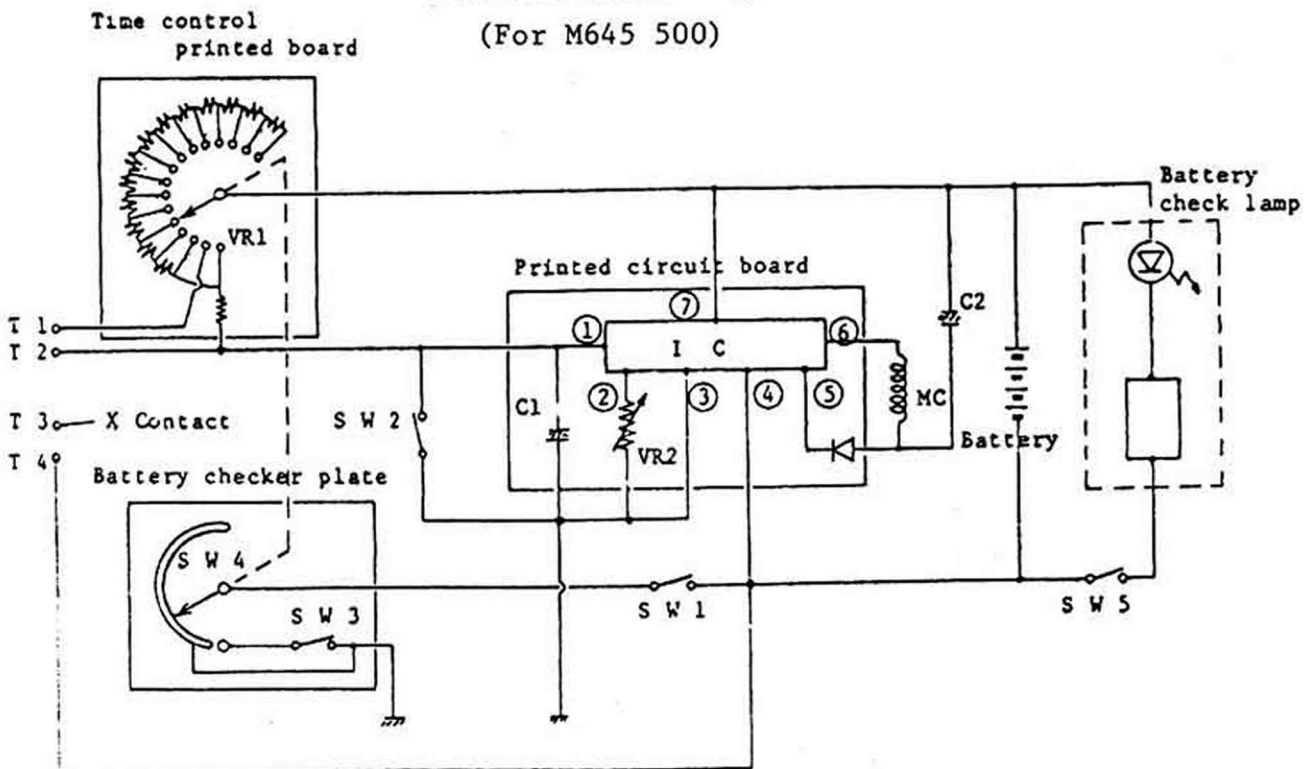


Fig. 88-3

SLT2064S1 Printed circuit board
for M645 1000S

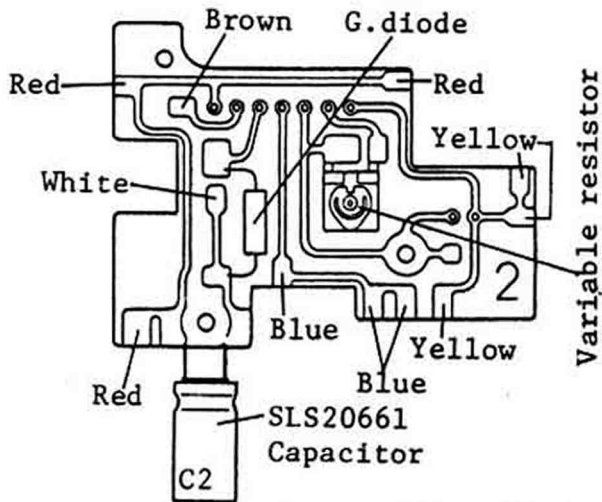


Fig. 88-4

SLT20311 Time control
printed board for
M645 1000S

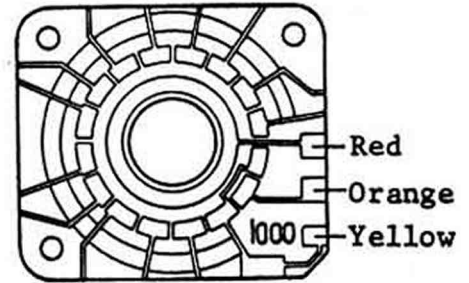


Fig. 88-5

SLS2064S1 Printed circuit board
for M645 500

Printed circuit board

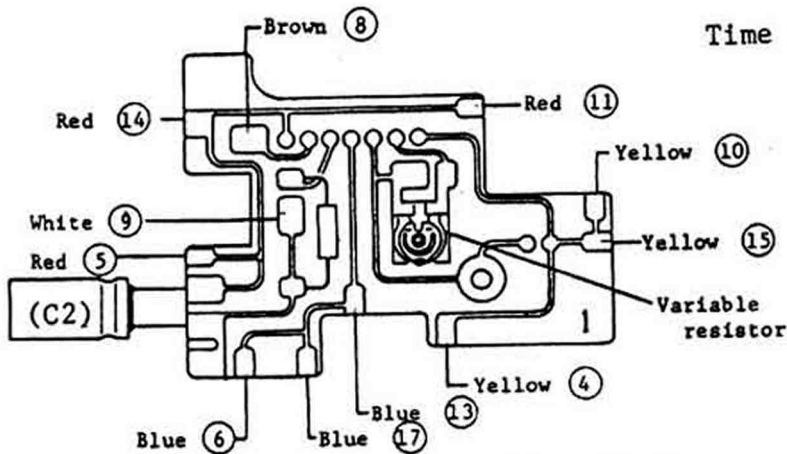


Fig. 88-6

SLS20311 Time control
printed board for
M645 500

Time control printed board

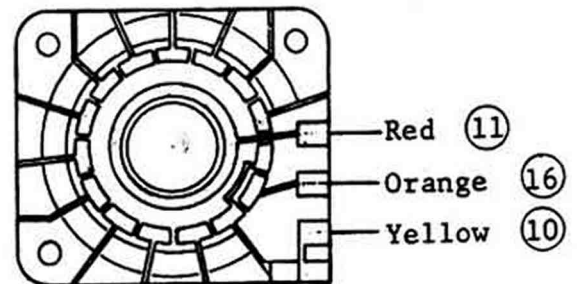


Fig. 88-7

Battery checker plate
SLS2041S1 for M645 1000S and M645 5000

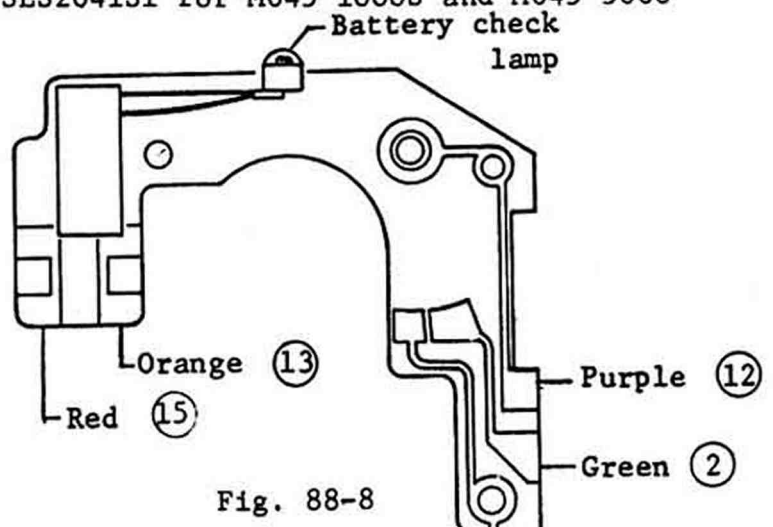


Fig. 88-8

8-2 Check and replacement of the Moving coil (M.C)

Before replacement the M.C, check the following points without fail.

A. Check

- 1) Battery voltage : 6 V
- 2) Battery chamber (SLT1671T1, SLS1671T1) :
Check electric current by the Tester.
If not , check following three points.
 - a. Looseness of (+) and (-) terminals in the chamber.
 - b. Malsolder of lead wires to the chamber.
 - c. Dirty and weakend terminals.
- 3) Operation of the trigger switch (SW2) :
 - a. With the shutter cocked, the SLS1431S1 Trigger switch must be switched on as shown in the Fig. 89-1.
 - b. With the shutter released, the trigger switch must be switched off as shown in the Fig. 89-2.

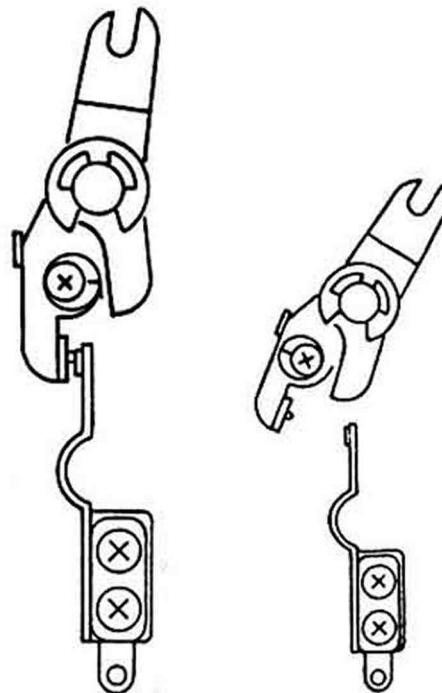


Fig. 89-1

89-2

- 4) Operation and electric current of the Main switch (SW1) :
 - a. Operation :
 1. Set the shutter speed dial to " B ".
While depressing the shutter release button, never return it, check that the lever (A) pushes contacts of the main SW1 as shown in the Fig.89-3.
 2. Is the SLS13841 Spring not out of its place ?

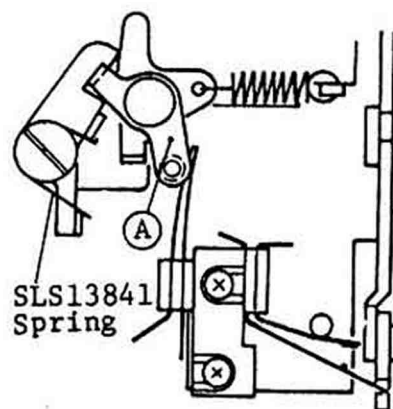


Fig. 89-3

b. Electric current :

Remove the battery from the body.
Then release the only 1st curtain by
pressing the shutter release button.

In above condition, check electric cur-
rent by using the Tester as follows.

Tester range.....X100

Tester terminal red(+)....Purple leadwire

Tester terminal black(-)..Blue leadwire

Tester needle should move to Zero

If not, check following four points.

1. Malsolder of purple and blue lead wires.
2. Sufficient contact efficiency of the SW1.
3. Dirty contacts of the SW1.
4. Is the SW1 installed tightly ?

5) Operation of the Bulb switch-over lever
See "5-4".

6) Check also "8-4" electronic circuit and
parts.

7) Check of the M.C :

Remove the battery from the body and
unsolder brown and white lead wires from
the printed circuit board as shown in
the Fig. 90-1.

Tester range.....X 1

Tester terminal red (+)....White leadwire

Tester terminal black(-)....Brown leadwire

Tester needle must indicate between 5Ω
and 10Ω and the M.C shaft must thrust out.
If not, the M.C is wrong.

Battery checker plate

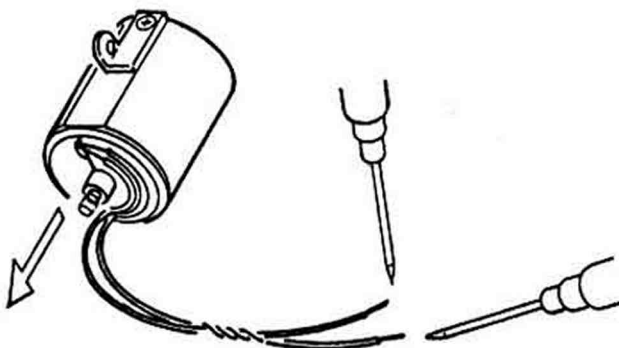
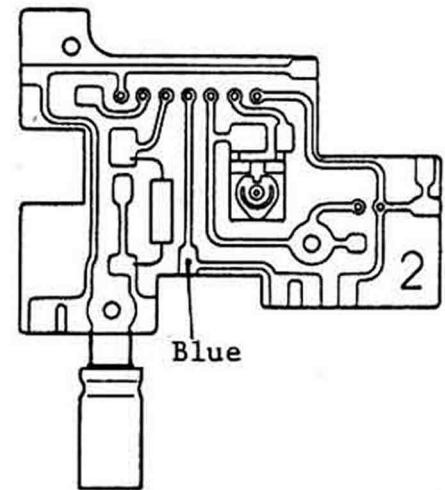
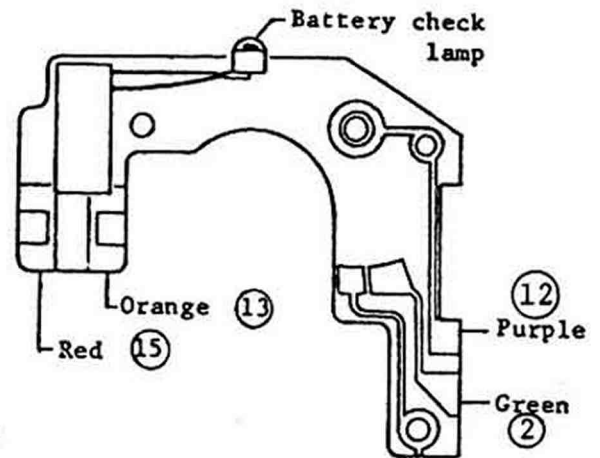


Fig. 90-2

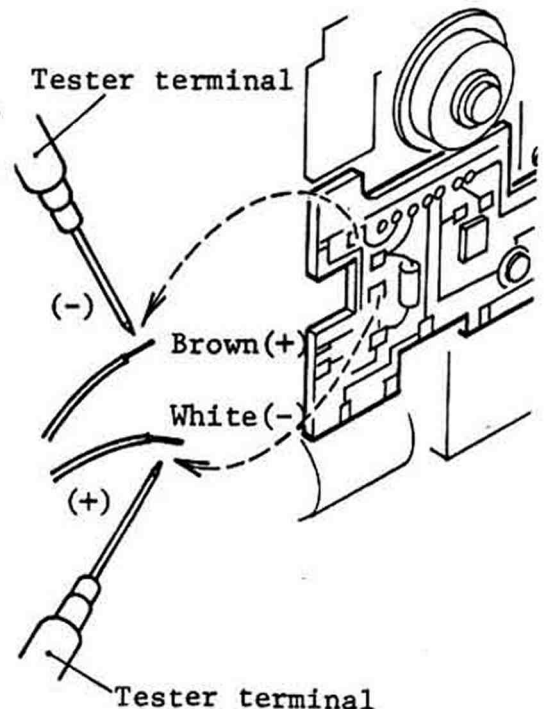


Fig. 90-1

B. Replacement of the moving coil

1) Remove the M.C from the body

- a. Remove SLS11551 and SLT17931 Screws as shown in the Fig. 91-1.
- b. Remove the M.C with brown and white lead wires from the body.

2) Installing new M.C :

- a. Check its operation by the Tester

Note : Do not apply 6 V to the M.C directly.

- b. The pole on the M.C where the brown lead wire is soldered is plus (+) and the other pole with white lead wire is minus (-).

Note : (+) and (-) pole of M.C is different among moving coils.

Brown lead wire is for plus pole and white one is for minus pole. When changing M.C or its lead wires, never mistake (+) and (-) poles.

- c. Install the M.C into the camera body.

Note : Do not pinch blue, orange, brown and white lead wires under the M.C.

- d. Put in order brown and white lead wires as shown in the Fig. 91-1 and do not make it touching to the release bar.

- e. Insulation of M.C :

Tester range.....X 1

Tester terminal red(+)...White and brown lead wire alternately

Tester terminal black(-)...Earth as shown in Fig. 91-2

With above test, the M.C must be in insulation.

- f. Recheck voltage and operation of M.C.
- g. Solder brown and white lead wires to the printed board.
- h. Insert battery into the battery chamber and check operation of M.C by releasing shutter.

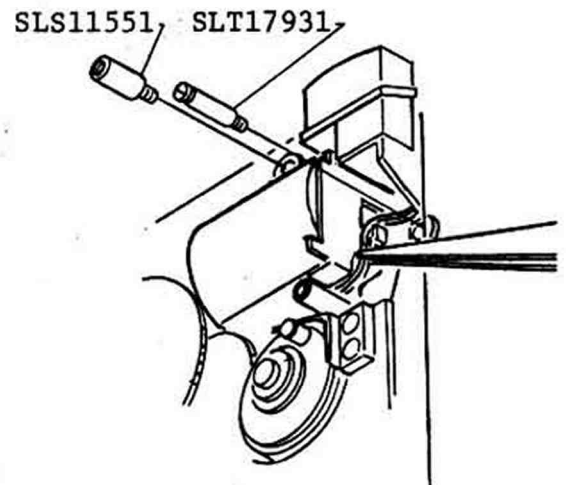


Fig. 91-1

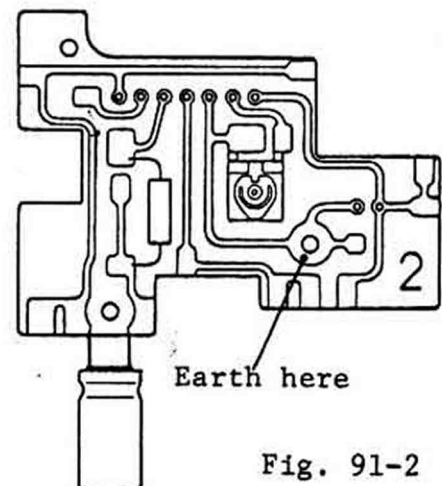


Fig. 91-2

8-3 Replacement SLT2064S1 Printed circuit

This printed circuit maybe very seldom to replace for its malfunction or damage.
If it is necessary, check following points.

A. Adjusting the variable resistor as shown in Fig. 92.

1) After performing the curtain travel time and shutter speed adjustment, set the shutter dial to 1/60sec..

2) Check its shutter speed.

A.slit.....15.8ms to 17ms

3) Adjustment is made by the variable resistor.

4) After rechecking the curtain travel time, check and adjust 1/1000sec. (SLS 1/500).

5) Check also X.synchro. delay time.

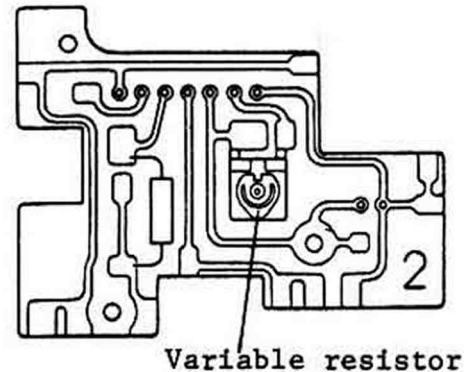



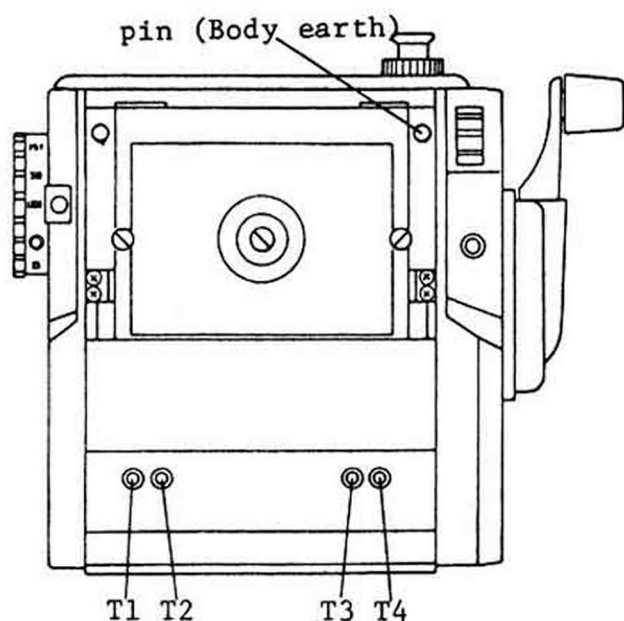


Fig. 92

8-4 Check electronic circuit by Tester

A. Circuit

Check place	Its purpose	Battery	S.P Dial	Tester Range	Tester terminal		Tester indicator
					Red	Black	
T 1-T 2	Current for P.D finder	With		D C 10 V	T 2	T 1	Shutter runs 0 K
T 2-T 4	Battery voltage for P.D finder	With		D C 10 V	T 2	T 4	6 Volt
T 3-Body earth	X.Synchro.contact When attaching finder	With	1/30	X 1	Body earth ↕ Synchro.cover		Current during shutter moves.....0 K
T 4-Body earth	Short between minus circuit and body earth	With-out	Except 	X 1	Body earth	T 4	Must not move
Bulb	Its operation	With	B	D C 10 V	Red T: Green or purple lead wire	Black T: IC pin No.4 blue lead wire	After winding and releasing —6 Volt. During "B"—0



Connect terminal

T 1 : for shutter speed input at the shutter dial "⊙"

T 2 : for Battery (+) at the shutter dial "⊙"

T 3 : for X-contact

T 4 : for Battery (-)

Fig. 93

Parts	Tester Range	Tester terminal		Tester indicator & others
		Red	Black	
1) Germa diode	X100	Pin 5 of IC	White lead wire of MC.	Moves widely
		Reverse of above		Moves slightly
2) Moving coil Capacitor C2	X100	(-) Pole of C2	Pin 7 of IC	Moves widely and then returns to Zero
3) Moving coil	X 1	White lead wire	Brown lead wire	Moves in limit 5Ω to 10Ω (Moving coil should operate)
4) B C.lamp with Battery	D C 10 V	Red lead wire	Orange lead wire	With the BC.button depressed, should point 6 V.
B C.lamp without Battery	X 1	Red lead wire on BC.	Red lead wire on printed circuit board	With the BC.button depressed. should not move
		Orange lead wire on BC.	Blue lead wire on printed circuit board	" Ditto "

Note : As Germa diode has a special character that is to send electric current only in one way direction, if you insert \pm poles of the Battery Upside-down, the current is off.

If above check for the BC.lamp is O K, but the lamp does not illuminate yet, change the BC.lamp to new one.

I C	Battery	S.P Dial	Tester Range	Tester terminal		Tester indicator & others
				Red	Black	
Pin 1	With	1/1000 (SLS 1/500)	D C 10 V	Pin 1	Pin 4	Points 6 V.
	With- out		X 1	SW 2	Pin 1	Current is on at start and of winding
Pin 2	With	1 sec. } 8 sec.	D C 10 V	Pin 2	Body earth	When winding, points Zero volt. While Slow shutter operating, points about 1.32 Volt
Pin 3	With	1 sec. } 8 sec.	D C 10 V	Pin 3	Body earth	When winding, points Zero volt. While Slow shutter operating, points Zero Volt
Pin 4	With		D C 10 V	Pin 4	Body earth	When winding, moves in direction to minus(-). While Slow shutter oper- ating, points Zero Volt
Pin 5	With		D C 10 V	Pin 5	Body earth	" Ditto "
Pin 6	With		D C 10 V	Pin 6	Body earth	" Ditto "
Pin 7	With		D C 10 V	Pin 7	Body earth	When winding, points zero volt. While Slow shutter operating, 6 Volt

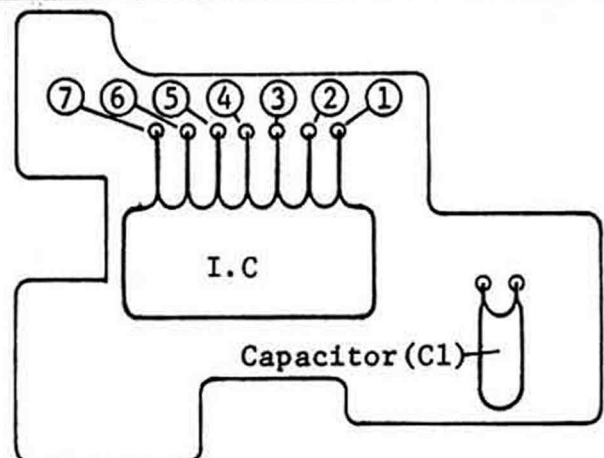


Fig. 94

C. Main cause for Battery exhaustion

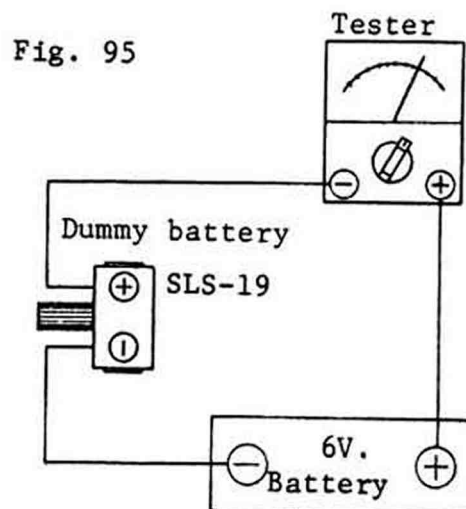
Main cause	Battery	Tester Range	Tester terminal		Tester indicator
			Red	Black	
Touch of main switch SW 1 contacts	With	D C 10 V	Body earth	Pin 4 (I C)	When releasing at Slow shutter speed, points under 6 Volt..... exhausting
M C. Operation	With-out	X 1	White (lead wire of MC)	Brown	Moves in limit 5Ω to 10Ω . (M C. should operate)
Short of M C. lead wires (White and Brown)	With-out	X 1	Body earth	White, Brown mutually	If shorted, indicator needle moves
Short of lead wires of Battery chamber	With-out	X 1	Body earth	Blue, Red mutually	" Ditto "

✕ Special check method of Battery exhaustion with dummy Battery

Check points	S.P.Dial	Tester Range	Tester indicator
Short, broken and malsolder of lead wires for Battery chamber and M C. Dirty shaft of M C.	At any shutter speed 0 K except \odot	1. First release shutter at "DC mA 25" 2. Next shift it to "DC mA 0.05"	Should come down less than $5\mu A$ within 10 sec. to 15 sec.

Note : Checking method of the Battery leak with Dummy battery and Tester.

1. Remove the battery from camera body and then put the SLS-19 Dummy battery into the chamber.
2. Make electric circuit among the Tester, Dummy battery and 6V Battery as shown in Fig. 95.
3. Checking procedure is shown above, "Battery exhaustion".



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Special Tool List and
Special Measuring Instruments
for
***Mamiya* m645**

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Special Tool List and Special Measuring Instrument

Instrument No.

Description and Use

SLS-1

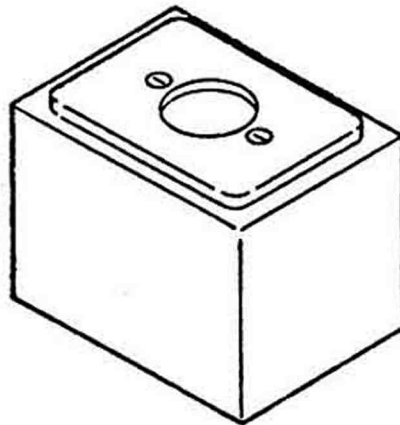


Adjusting Body
flange back and
Parallelism

Standard gauge bar.

(Exclusively used for Inst No. U-1)

SLS-2

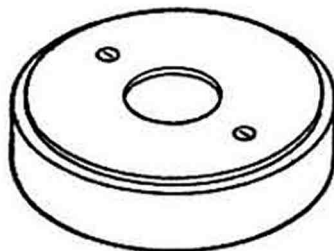


Adjusting Body
flange back and
Parallelism

Camera Body supporter

(Exclusively used for Inst No. U-1)

SLS-3

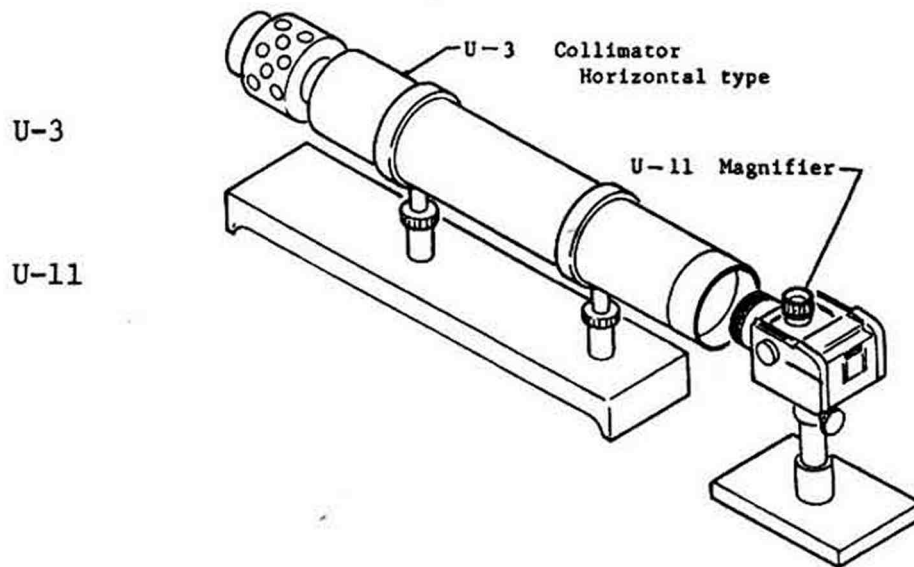


Adjusting Body
flange back and
Parallelism

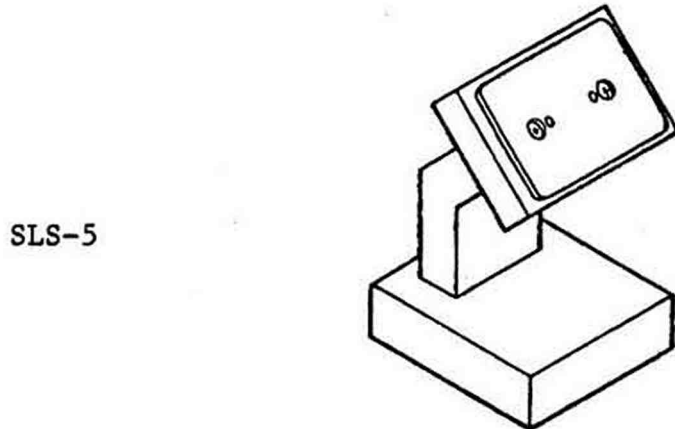
Parallel disk gauge

(Exclusively used for Inst No. U-1)

Finder infinity check collimator
(Horizontal type)

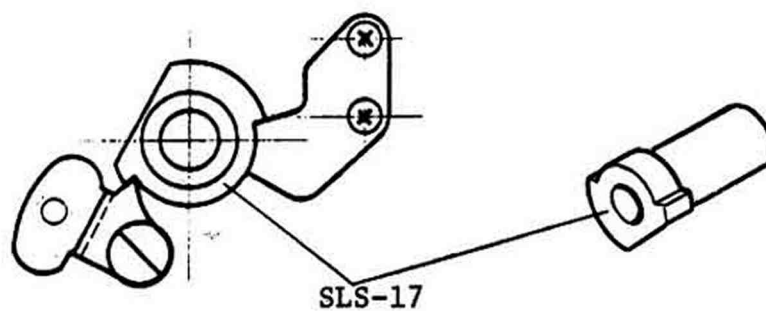


Magnifier



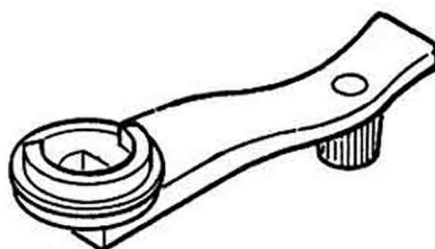
Mirror 45° checking stand

SLS-17



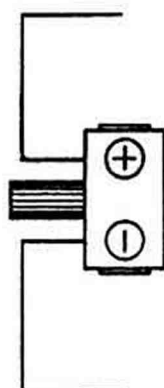
Position gauge for determining SLS15611 Stopper

SLS-18



Winding crank lever
Temporarily use for repair work

SLS-19



Dummy Battery for checking battery leak